Supplemental Document

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Denoising of pre-beamformed photoacoustic data using generative adversarial networks: supplement

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1. NUMBER OF AVERAGED FRAMES

In choosing the number of RF frames to average for our reference dataset, we sought a balance between data quality and scan time. Figure S1 illustrates this payoff for a representative plane of our training data, by measuring SSIM and FSIM as a function of the number of frames averaged, when compared to the average of 100 frames total. For the present study, we found that 20 frames offered the best balance.

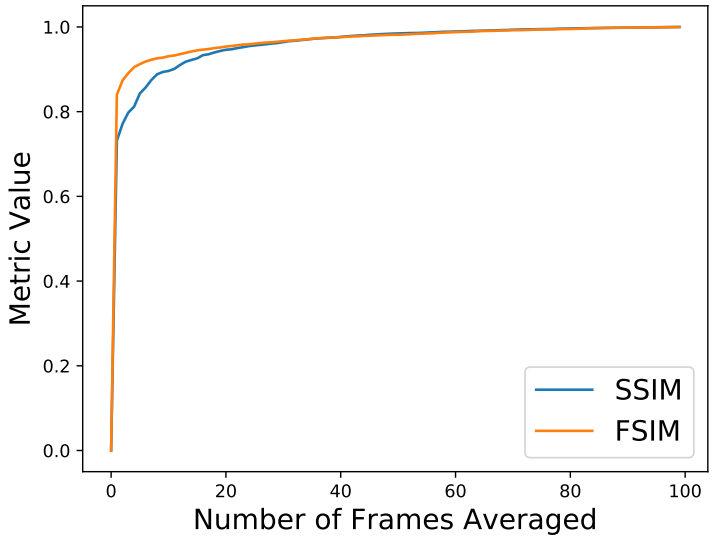

Fig. S1. Quality metrics as a function of the number of averaged RF frames per scan position.

2. NUMBER OF FISTA ITERATIONS

To determine how many iterations of our reconstruction algorithm are required, we can plot the minimization objective, defined in Equation 7 in the main text, as a function of the iteration number. This relationship is shown in Figure S2 for a representative imaging plane from our testing dataset. We chose to stop all reconstructions in the present study after 20 iterations, as the objective function changes very little beyond this point.

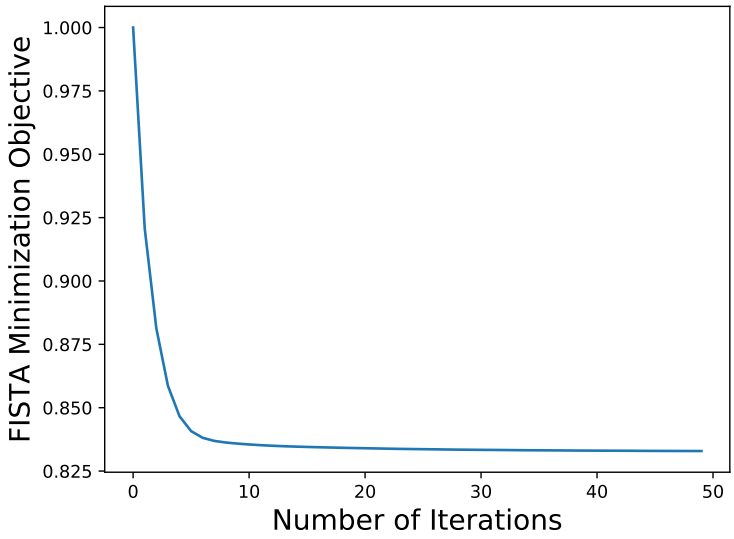

Fig. S2. FISTA minimization objective as a function of iteration number, which was used to choose the stopping point for our image reconstruction.